HOMESTAKE MINING COMPANY NPL SITE

MARK PURCELL AND SAI APPAJI

U.S. EPA Region 6

Dallas, Texas

Community Upset with Groundwater Cleanup

- BVDA Wants EPA to Change Cleanup Levels
  - Met with EPA and State in August 2014
  - Presented historic data (1960s)
  - Wants EPA to reassess
- Requests Follow-up Meeting with EPA
  - March 5, 2015
- Hired Technical Consultant
  - Preparing report to support position at upcoming meeting

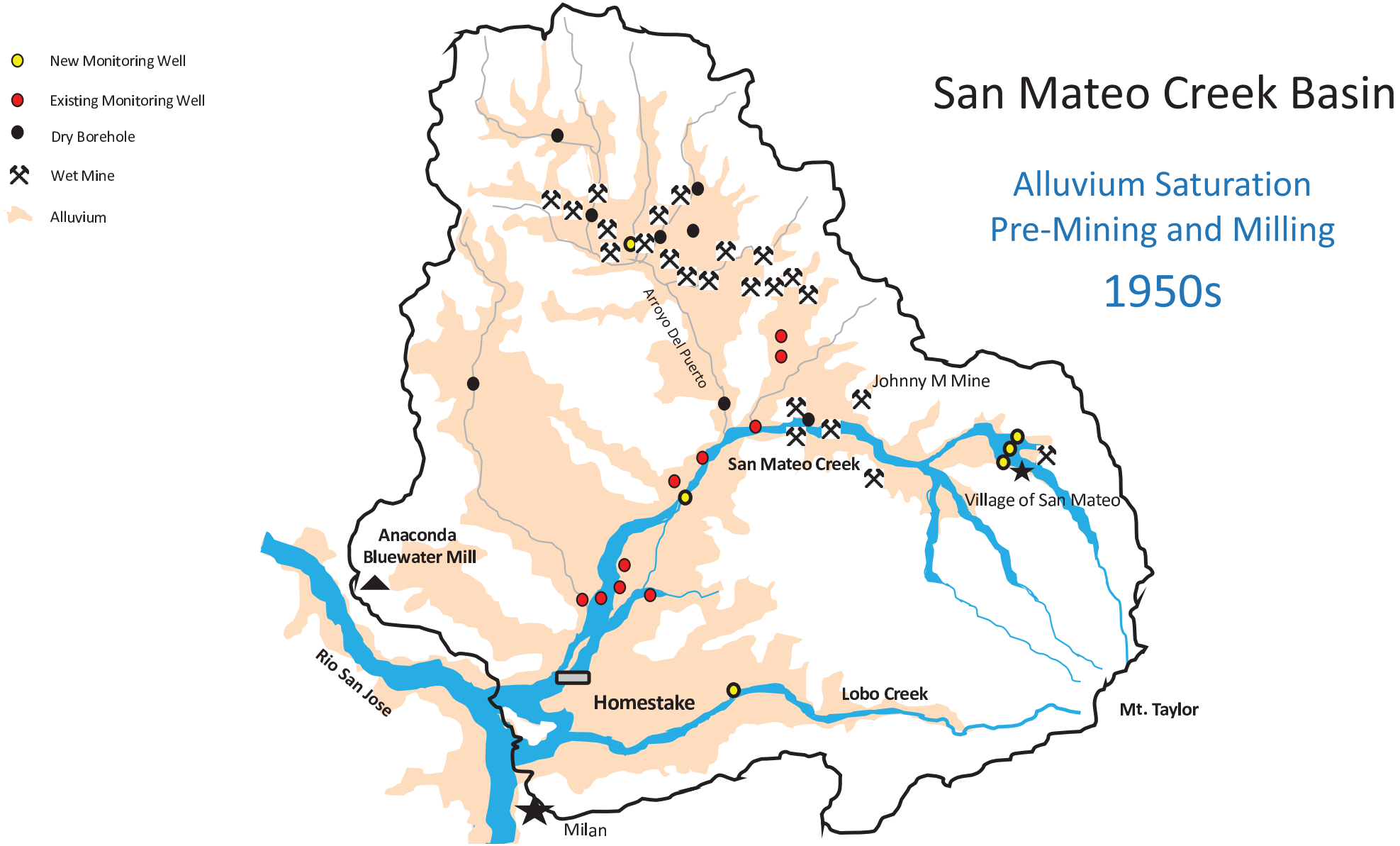
Site Cleanup Levels:

Established from background levels by NRC and NMED

BVDA – Bluewater Valley Downstream Alliance

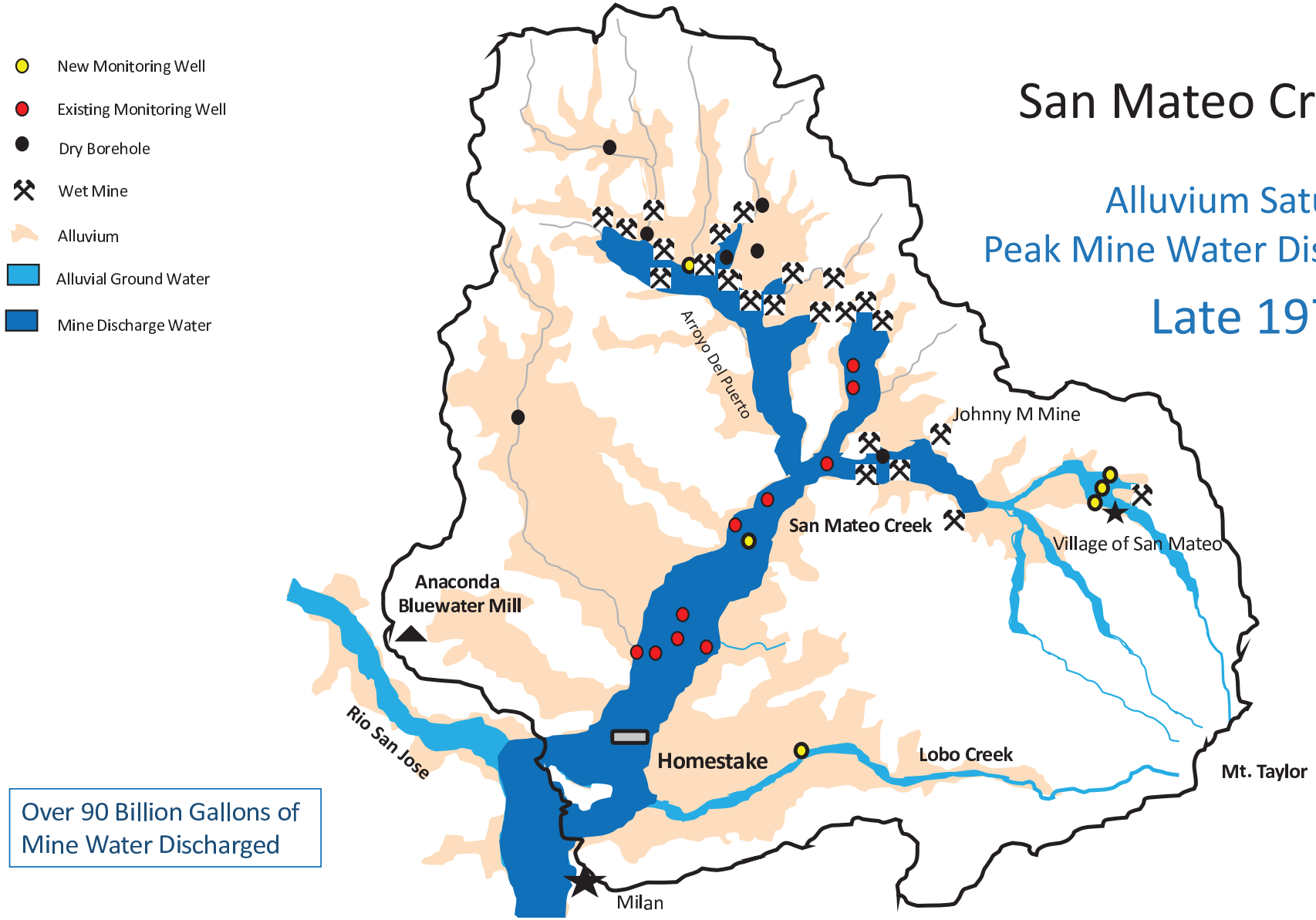
Ground Water Issues Extend Beyond Homestake – A Basin Wide Problem

- Ground Water Up-gradient of Homestake Impacted by Other Sources
  - Legacy Uranium Mines and Mills in San Mateo Creek Basin
- Impacted Up-gradient Water is Background Water at Homestake
  - Basis for Cleanup Levels

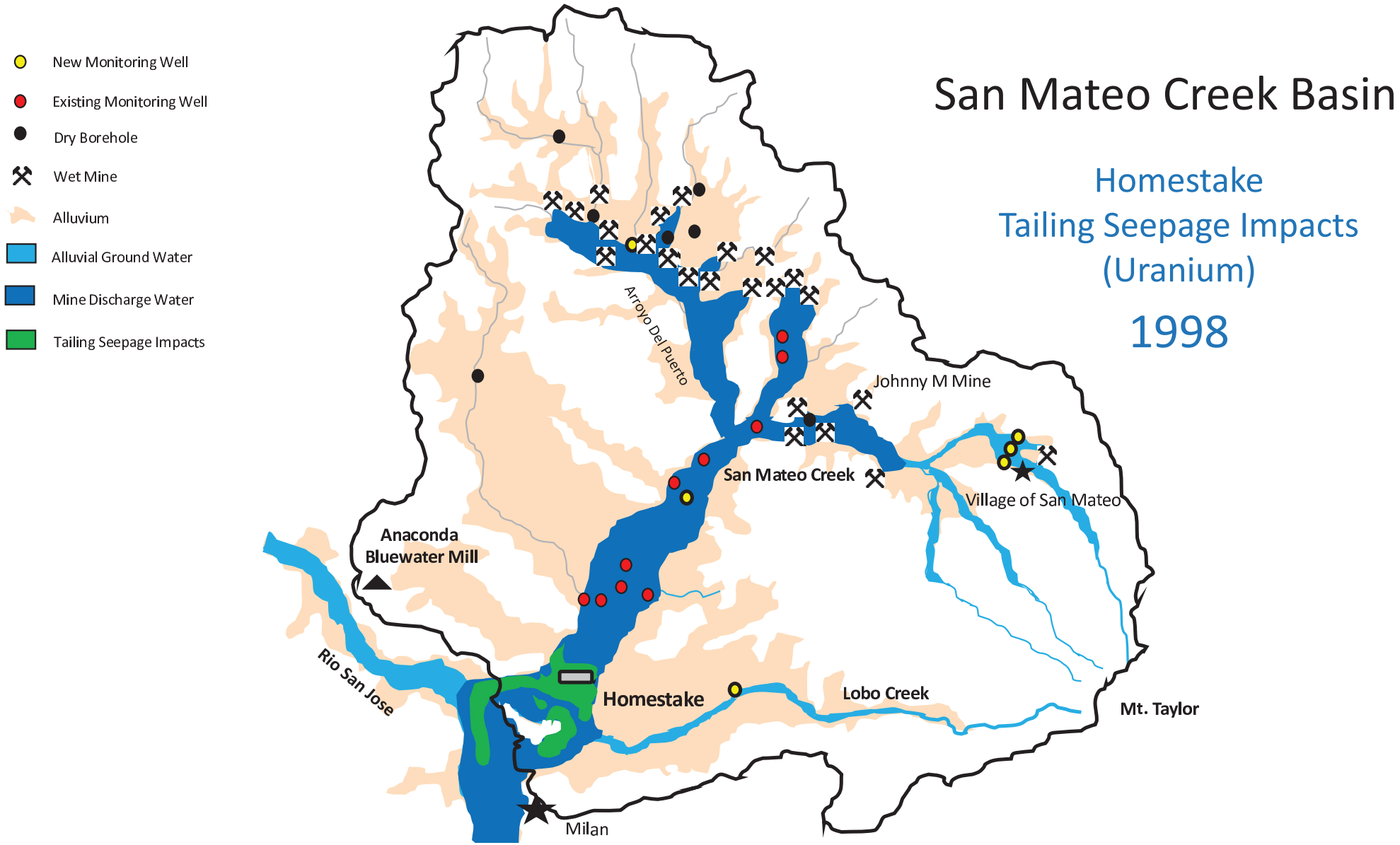

New Monitoring Well
Existing Monitoring Well
Dry Borehole
Wet Mine
Alluvium
San Mateo Creek Basin
Alluvium Saturation
Pre-Mining and Milling
1950s
Arroyo Del Puerto
Johnny M Mine
San Mateo Creek
Village of San Mateo
Anaconda
Bluewater Mill
Rio San Jose
Homestake
Lobo Creek
Mt. Taylor
Milan

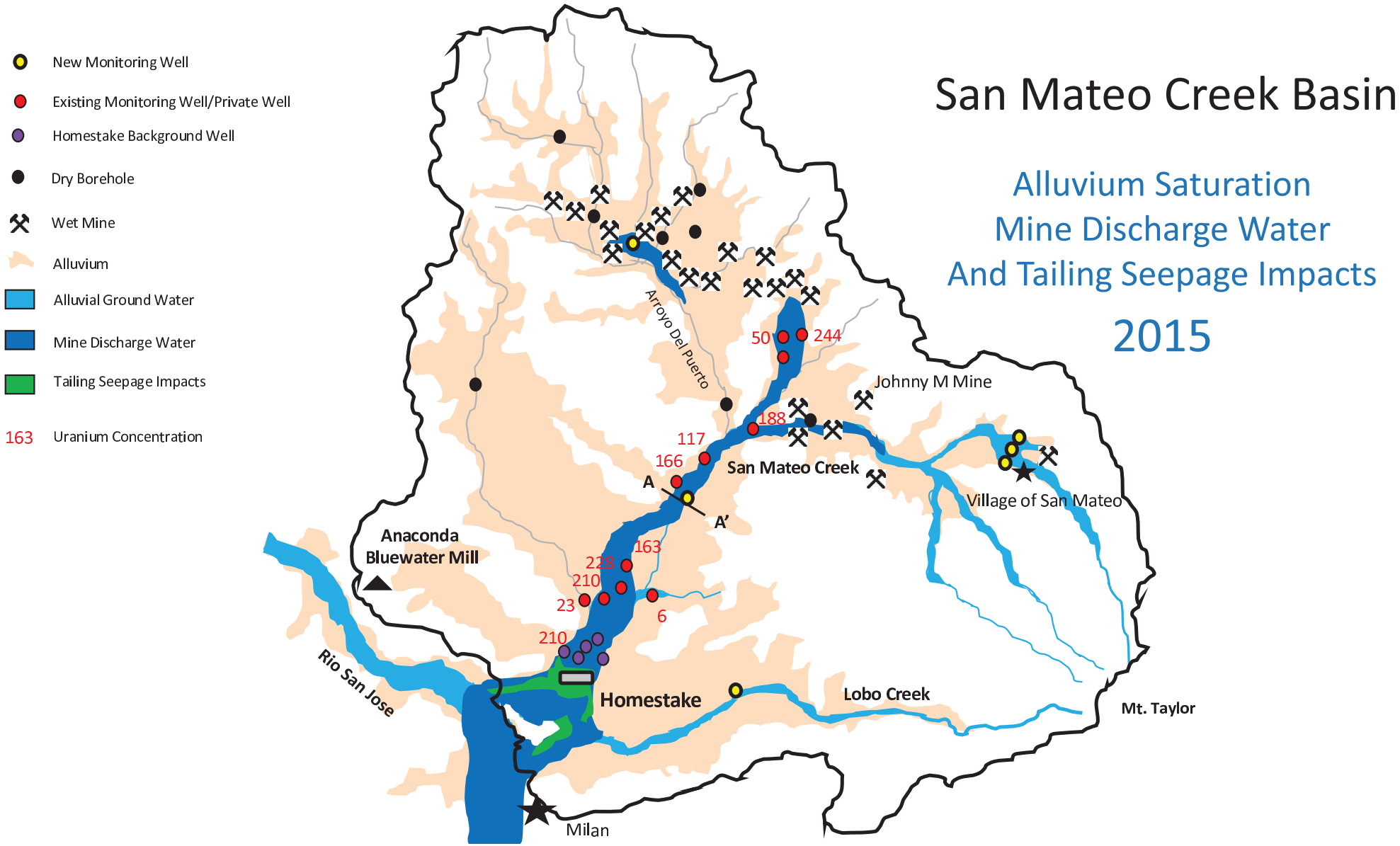
San Mateo Creek Basin

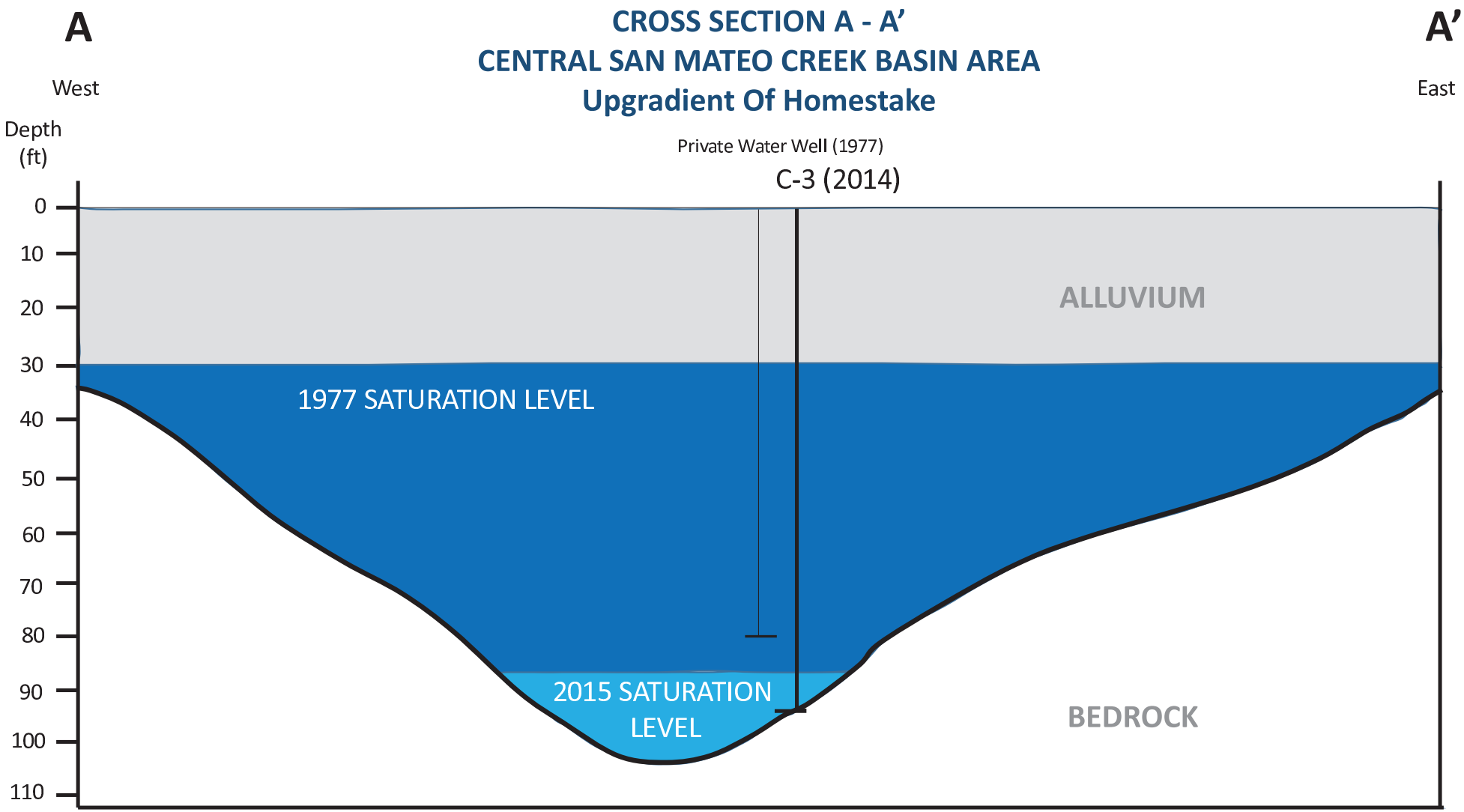
Alluvium Saturation
Peak Mine Water Discharge Period
Late 1970s



Over 90 Billion Gallons of Mine Water Discharged


New Monitoring Well
Existing Monitoring Well
Dry Borehole
Wet Mine
Alluvium
Alluvial Ground Water
Mine Discharge Water
Tailing Seepage Impacts
San Mateo Creek Basin
Homestake
Tailing Seepage Impacts
(Uranium)
1998
Arroyo Del Puerto
Johnny M Mine
San Mateo Creek
Village of San Mateo
Anaconda
Bluewater Mill
Rio San Jose
Homestake
Lobo Creek
Mt. Taylor
Milan

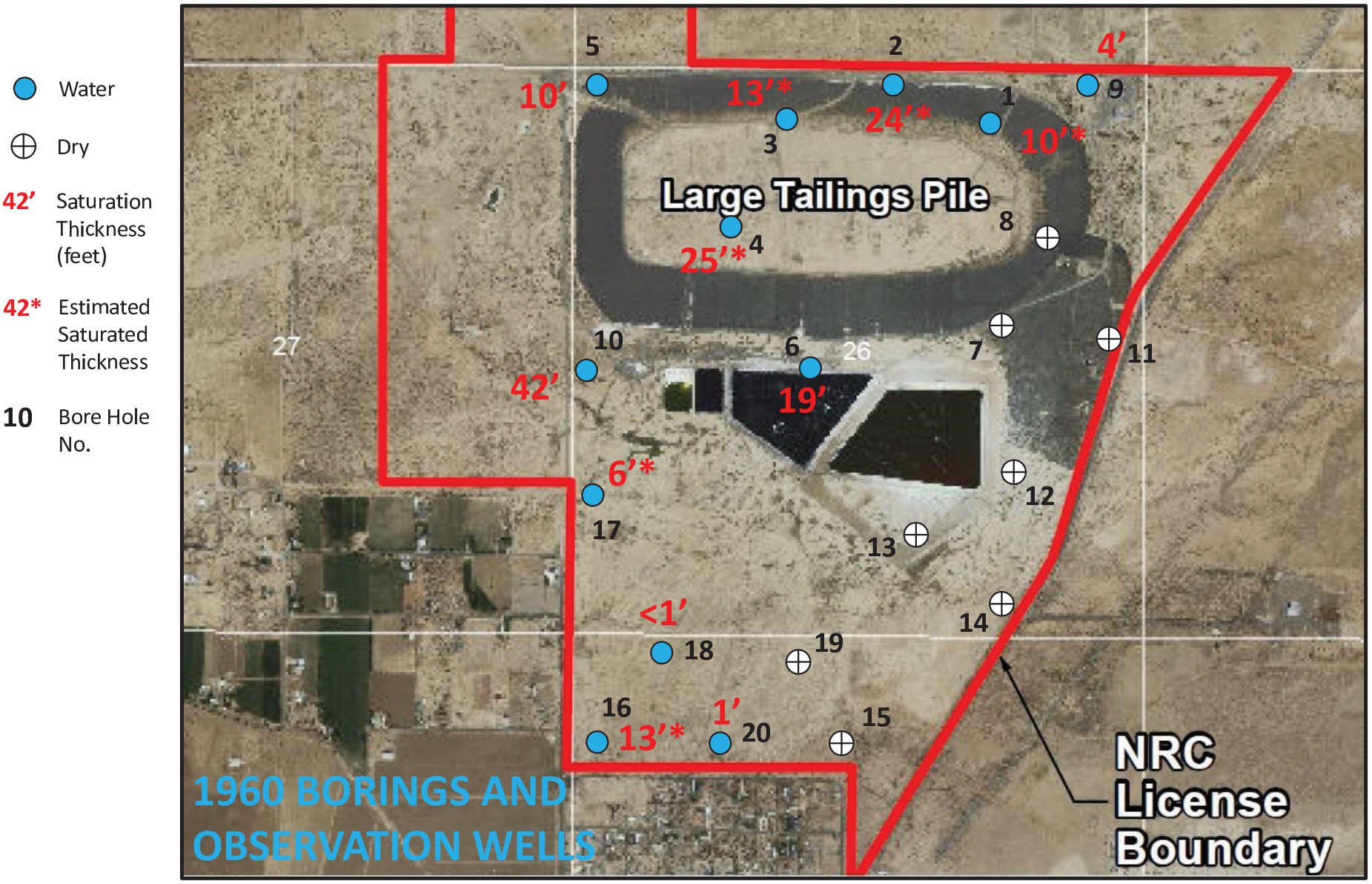

New Monitoring Well
Existing Monitoring Well/Private Well
Homestake Background Well
Dry Borehole
Wet Mine
Alluvium
Alluvial Ground Water
Mine Discharge Water
Tailing Seepage Impacts
163 Uranium Concentration
San Mateo Creek Basin
Alluvium Saturation
Mine Discharge Water
And Tailing Seepage Impacts
2015
Arroyo Del Puerto
50
244
Johnny M Mine
188
117
166
A
A'
San Mateo Creek
Village of San Mateo
Anaconda
Bluewater Mill
163
223
210
23
6
210
Rio San Jose
Homestake
Lobo Creek
Mt. Taylor
Milan

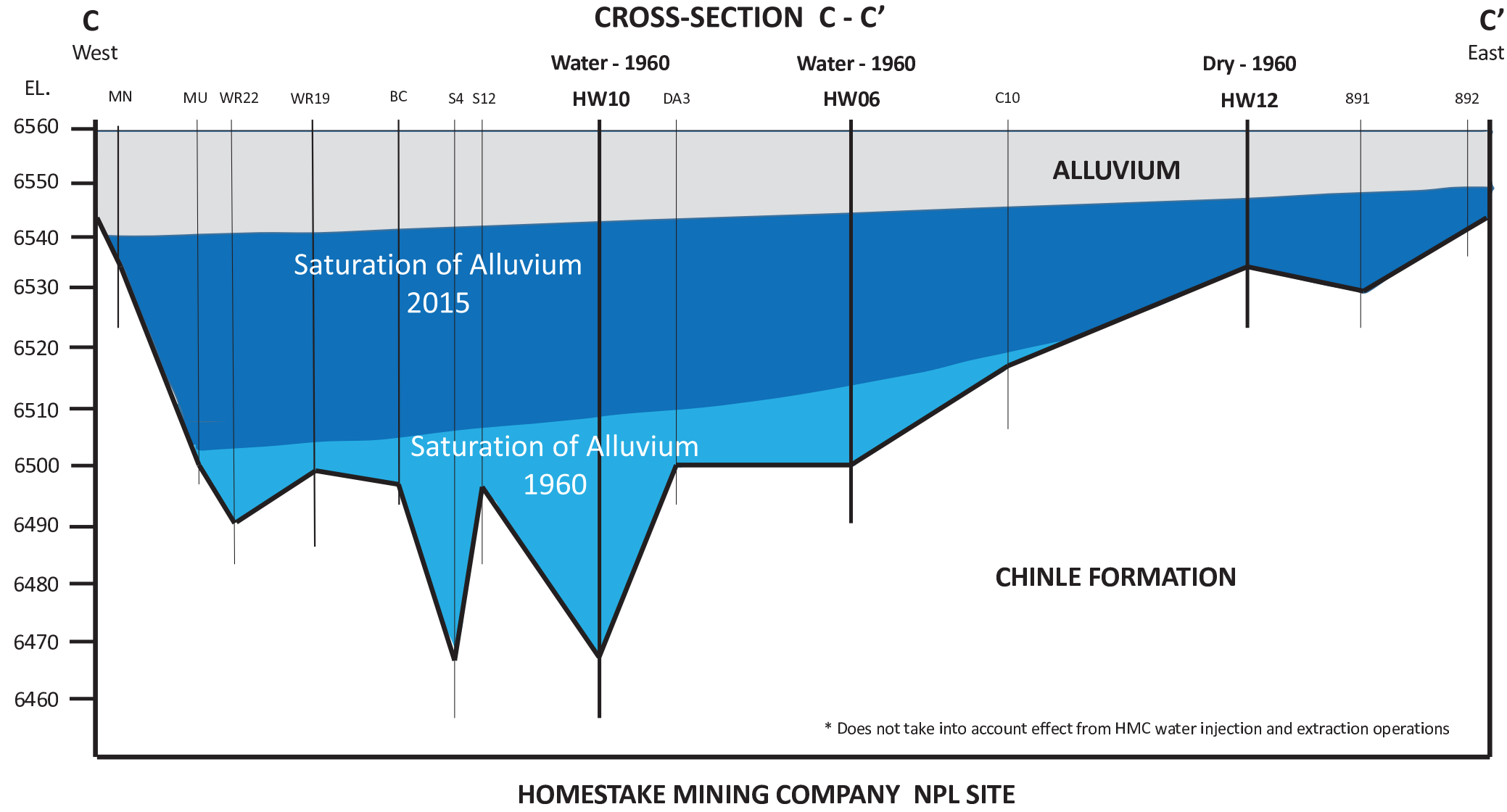

A
A'
CROSS SECTION A - A'
CENTRAL SAN MATEO CREEK BASIN AREA
Upgradient Of Homestake
West
East
Depth (ft)
Private Water Well (1977)
C-3 (2014)
0
10
20
30
40
50
60
70
80
90
100
110
ALLUVIUM
1977 SATURATION LEVEL
2015 SATURATION LEVEL
BEDROCK

Alluvial Groundwater – BVDA Issues

BVDA Challenges EPA

- No alluvial ground water at site before milling!
  - Based on 1960 driller's logs
- Ground water is from Homestake!
- Why have cleanup numbers?


Water
Dry
42’ Saturation Thickness (feet)
42* Estimated Saturated Thickness
10 Bore Hole No.
5
10’
2
13’*
4’
9
1
24’*
3
10’*
Large Tailings Pile
8
25’*
4
27
10
6
26
7
11
42’
19’
6’*
12
17
13
<1’
14
18
19
16
1’
15
13’*
20
1960 BORINGS AND OBSERVATION WELLS
NRC License Boundary

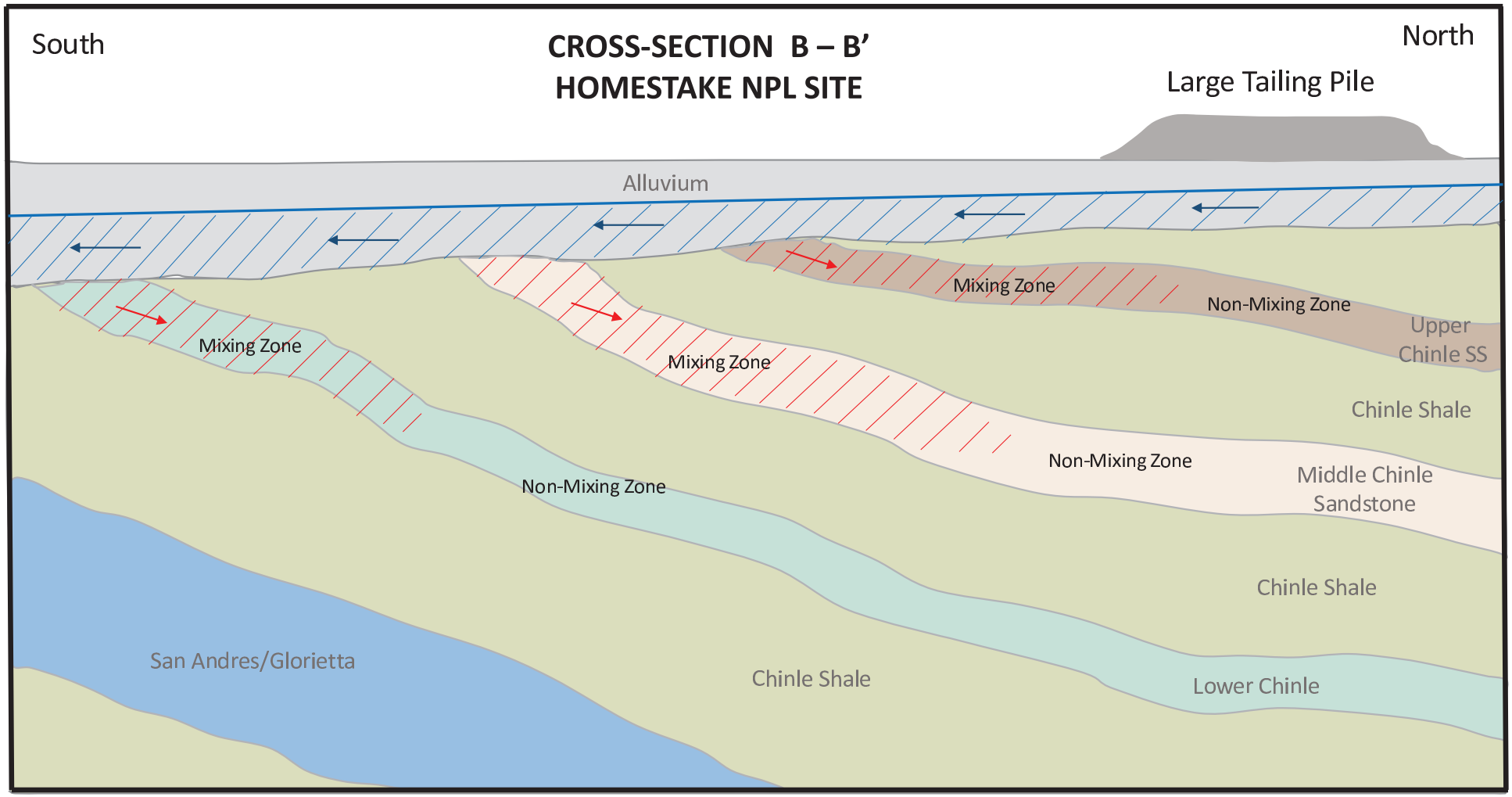


HOMESTAKE MINING COMPANY NPL SITE

Chinle Groundwater – BVDA Issues

BVDA Challenges EPA

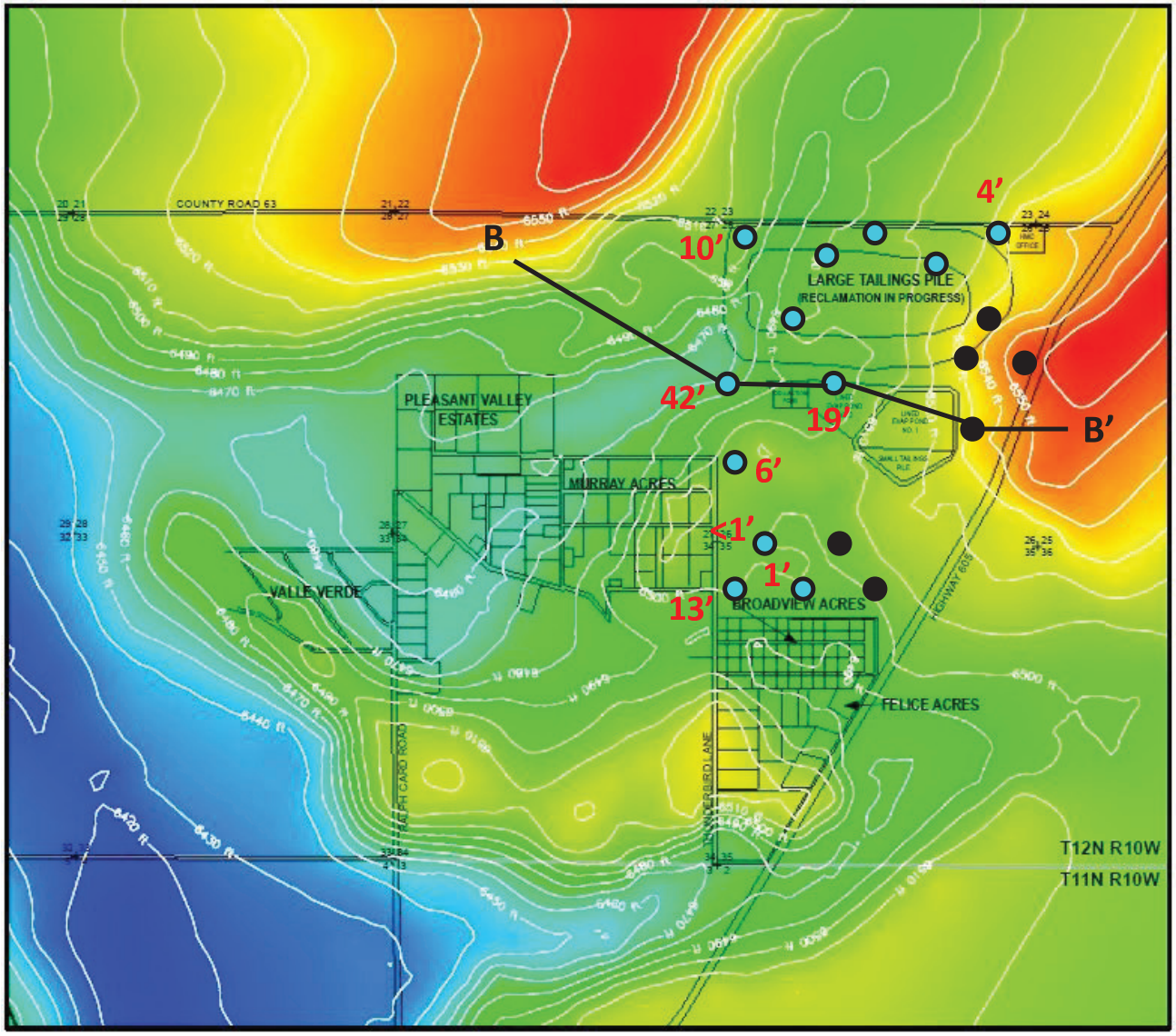
- Why are cleanup standards for Chinle aquifers so high?
  - Higher than water quality in private wells?
- By accepting "Mixing Zone" agencies allow Homestake to contaminate Chinle aquifers
  - Allows cleanup to poorer water quality!


South
CROSS-SECTION B – B'
HOMESTAKE NPL SITE
North
Large Tailing Pile
Alluvium
Mixing Zone
Mixing Zone
Mixing Zone
Non-Mixing Zone
Upper
Chinle SS
Chinle Shale
Non-Mixing Zone
Middle Chinle
Sandstone
Non-Mixing Zone
Chinle Shale
San Andres/Glorietta
Chinle Shale
Lower Chinle

Next Steps

- Meet with BVDA on March 5, 2015
  - BVDA requested video conference
  - Present preliminary EPA analysis of background
  - Present status update on San Mateo Creek Basin groundwater study
    - Data from Private Well Sampling is currently being summarized and reported to residents

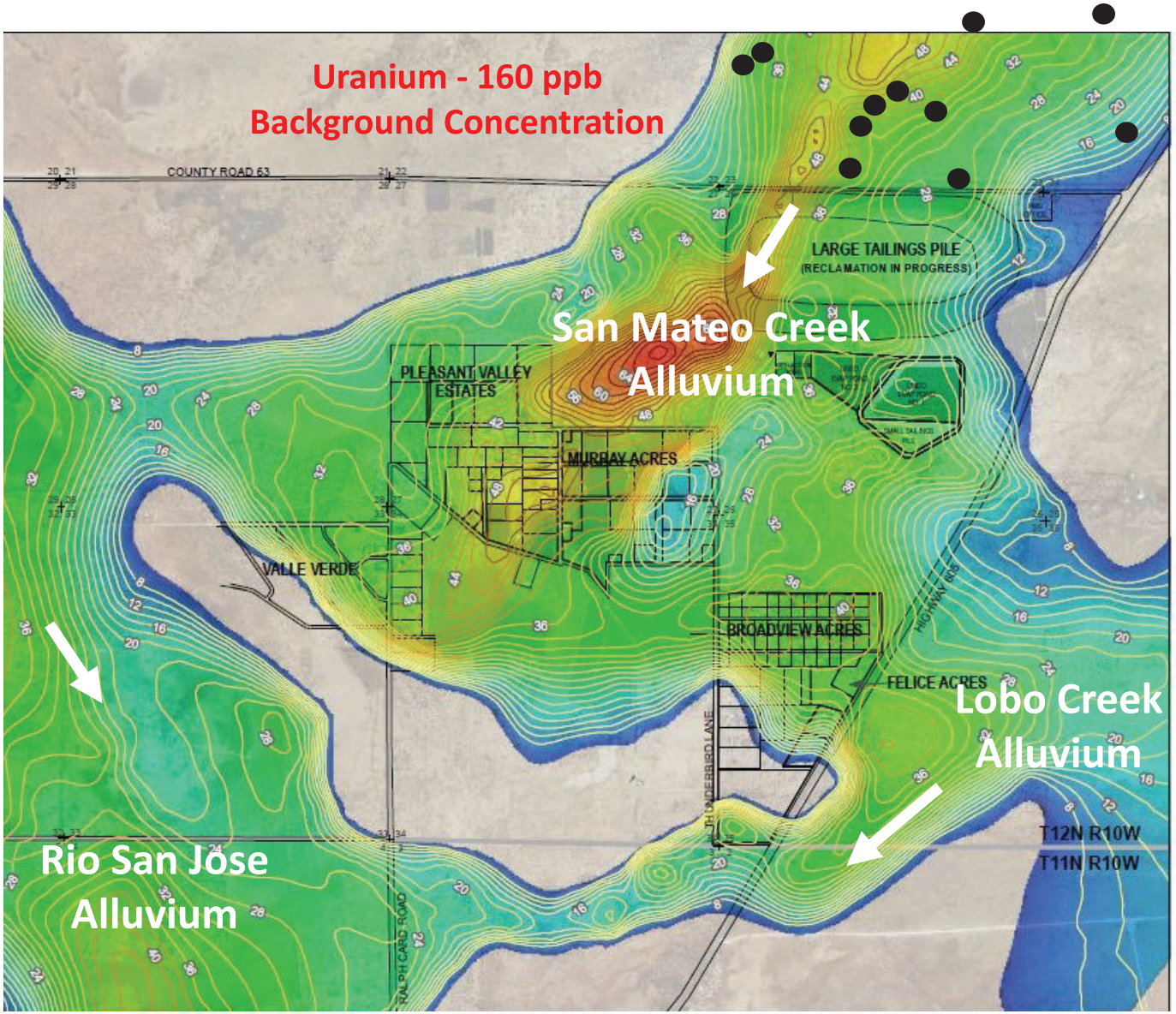
EXTRA SLIDES



SATURATED ALLUVIUM 1960

- Water in Borehole
- Dry Borehole

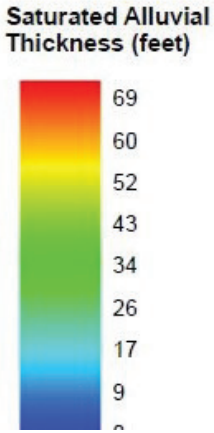
** Alluvial Ground Water Present in Area of Subdivisions In 1960*



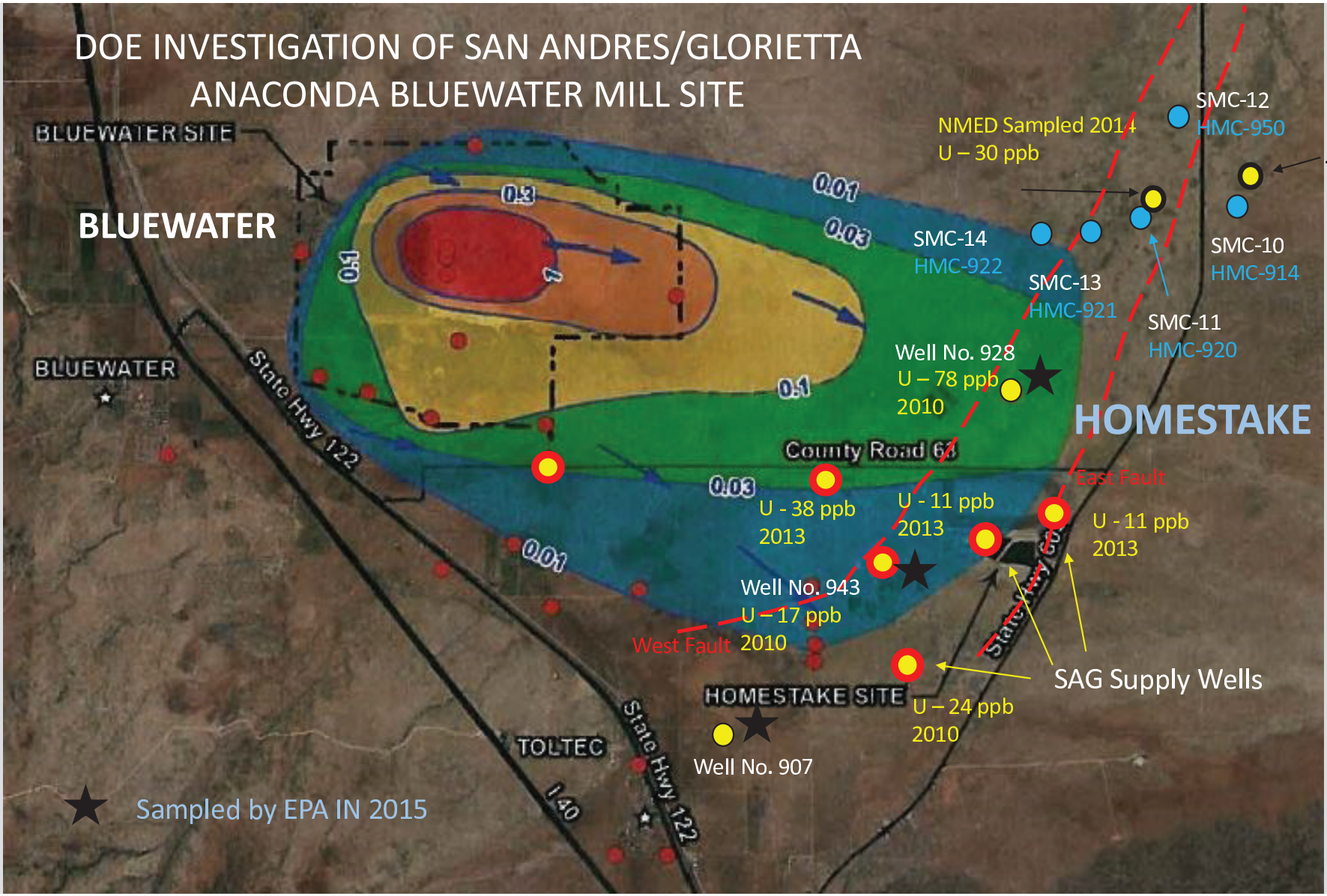
EPA ISSUES WITH ALLUVIAL BACKGROUND VALUES

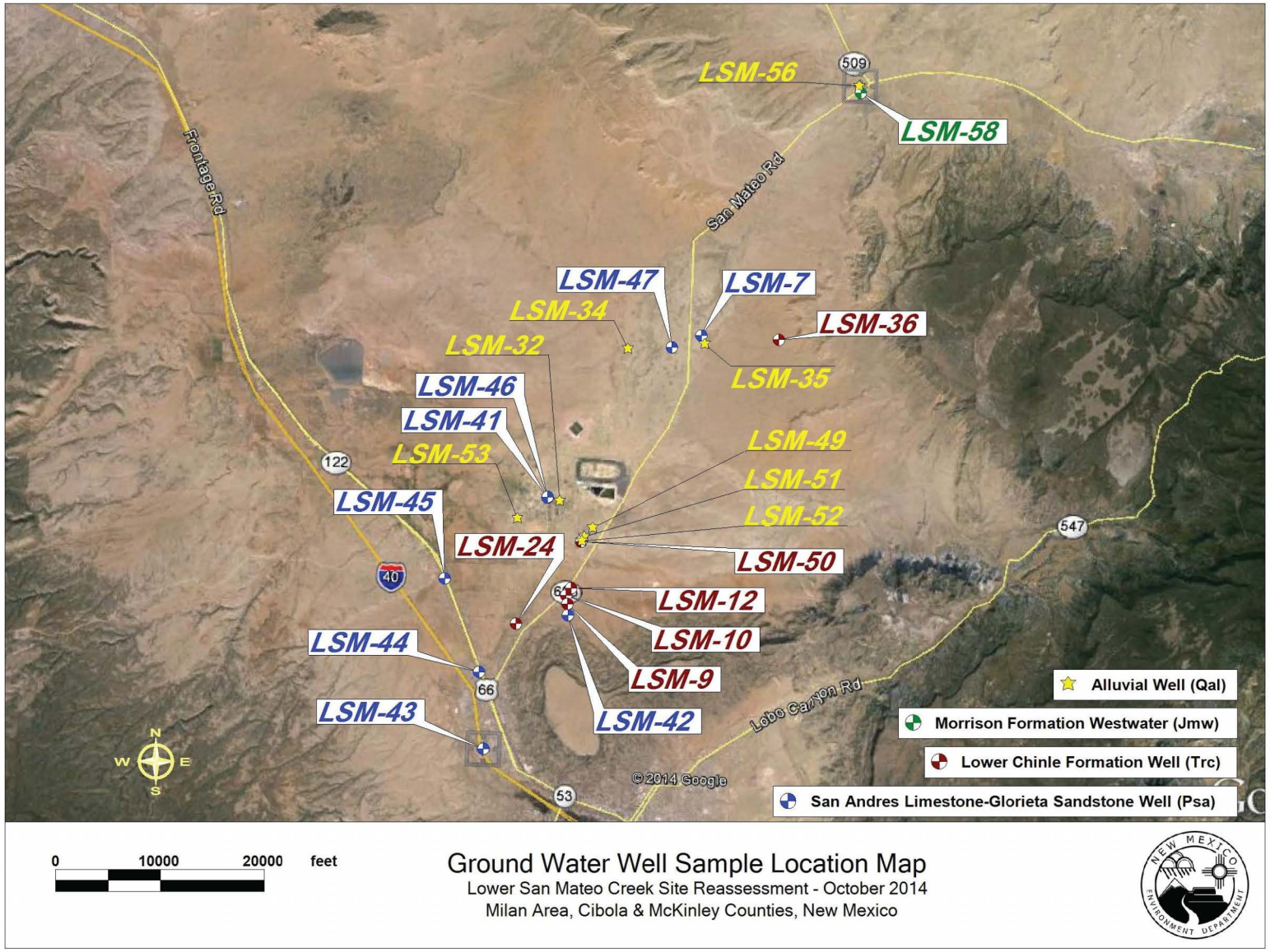
THREE ALLUVIAL WATER SYSTEMS

Site Alluvium Background Concentrations Based Only on San Mateo Creek Alluvial Water Quality



- Homestake Background Well


DOE INVESTIGATION OF SAN ANDRES/GLORIETTA
ANACONDA BLUEWATER MILL SITE
BLUEWATER SITE
BLUEWATER
BLUEWATER
State Hwy 122
0.2
0.1
0.01
0.03
0.1
0.03
0.01
NMED Sampled 2014
U – 30 ppb
SMC-12
HMC-950
NMED Sampled 2014
<1.0 ppm
SMC-14
HMC-922
SMC-13
HMC-921
SMC-10
HMC-914
SMC-11
HMC-920
Well No. 928
U – 78 ppb
2010
HOMESTAKE
County Road 63
East Fault
U - 38 ppb
2013
U - 11 ppb
2013
U - 11 ppb
2013
Well No. 943
U – 17 ppb
2010
West Fault
State Hwy 122
SAG Supply Wells
HOMESTAKE SITE
U – 24 ppb
2010
Well No. 907
TOLTEC
I-40
State Hwy 122
Sampled by EPA IN 2015



Ground Water Well Sample Location Map

Lower San Mateo Creek Site Reassessment - October 2014

Milan Area, Cibola & McKinley Counties, New Mexico

NMED PRIVATE WELL SAMPLING FALL - 2014

PERFORMED AT THE REQUEST OF BVDA